

THAT WHICH IS CLAIMED IS:

1. A composite structural member comprising, in a sandwich configuration, a core adhesively bonded on opposite lateral surfaces thereof to structural skin layers that may be the same or different, said core comprising an extruded, closed-cell polymer foam layer made from a polymer selected from the group consisting of polypropylene homopolymer, copolymers of polypropylene and other monomers wherein the polypropylene is at least about 80% by weight of the copolymer, and blends of polypropylene and one or more different polyolefins wherein the polypropylene is present in an amount of at least about 80% by weight of the blend, and wherein each said opposite lateral surface of said core is skived to provide a layer of open cells for adhesive bonding to said skin layers.
2. The composite structural member of Claim 1 wherein said structural skin layers are selected from the group consisting of aluminum, steel, titanium, plywood, high-pressure laminates, and reinforced plastics.
- All new*
3. The composite structural member of Claim 1 wherein said core is cut through most of its thickness from a lateral surface to form a hinge at the opposite lateral surface about which said core can be bent.
4. The composite structural member of Claim 1 wherein said structural skin layers comprise fiber-reinforced plastic.
5. The composite structural member of Claim 1 wherein said core and said structural skins are adhesively bonded by a thermoplastic adhesive or thermosetting adhesive applied between said core and said structural skin layer.
6. The composite structural member of Claim 1 wherein said core is from about 1/4 to 2-1/2 inches thick.
7. The composite structural member of Claim 1 wherein each said skin layer is less than about 1/4 of an inch thick.

8. The composite structural member of Claim 1 wherein said polypropylene foam has a density of from about 3 to 8 pcf and a shear strength of from 60 to 200 psi.

9. The composite structural member of Claim 1 wherein said polypropylene foam has a density of from about 4 to 5 pcf.

10. A marine craft comprising composite structural members as recited in Claim 1.

11. A composite structural member comprising a foam core of skived, extruded, physically expanded, closed-cell high melt strength polypropylene copolymer sandwiched between structural skin layers selected from the group consisting of aluminum, steel, titanium, plywood, high-pressure laminates, and fiber-reinforced plastics, and wherein said core is adhesively bonded to said skin layers.

12. The composite structural member of Claim 11 wherein said skin layers and said core are adhesively bonded by a thermoplastic or thermosetting resin.

13. The composite structural member of Claim 11 wherein said fiber-reinforced plastic has a matrix of a thermoplastic or thermosetting resin.

14. A method of preparing a rigid composite structural member comprising the steps of extruding a closed-cell polymer foam layer made from a polymer selected from the group consisting of polypropylene homopolymer, copolymers of polypropylene and other monomers, and blends of polypropylene and one or more different polyolefins, skiving each of the lateral surfaces thereof to open the cells at the surface, and adhesively bonding a structural skin to each lateral surface.

15. The method of Claim 13 further comprising, prior to the step of adhesive bonding of the skins, the step of cutting the core through most of its thickness from a lateral surface to form a hinge at the opposite lateral surface about which said core can be bent.

